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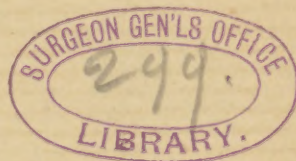
A CLINIC  
ON  
HEART DISEASE.

BY

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# A CLINIC ON HEART DISEASE.

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Because of the close proximity of the valves of the heart to one another, the sounds and the murmurs are best distinguished at points somewhat removed from their origin. These positions are found in the direction of the blood current, and also where the heart approaches the surface of the chest. Cardiac sounds must be dissociated in your minds from heart murmurs. Sounds are normal, and therefore audible in health, while murmurs are abnormal, and hence occur only in disease. Heart sounds, it is true, may be heard in disease, but they are then modified in quality. The place selected for listening to aortic sounds is close to the sternum in the second right intercostal space; for the pulmonary sounds, at the left edge of the sternum in the same relative position. Sounds from the mitral valve are conducted to the left apex, and those of the tricuspid valve are best heard just over the ensiform cartilage. Here are the points of



maximum intensity, not only of heart sounds, but also, with few exceptions, of valvular murmurs.

Now, what is the accepted explanation of the mechanism of heart sounds? The first sound, which is synchronous with the apical impulse, is produced by closure of the auriculo-ventricular valves, by contraction of the muscular fibres of the heart and by the impulse of the organ against the chest. The second sound is due solely to the sudden closure of the aortic and pulmonary valves. First a sound, then a short silence, followed by a second sound, and then a longer silence, comprise rhythmic cardiac action. Both these sounds are audible at the apex, and both are heard also at the base, but in the former instance the accent is upon the first, and in the latter upon the second sound. In order to fully appreciate this cycle of the heart's action, let me give you in a few words what is taking place within the organ. While blood is being thrown from the right ventricle into the pulmonary artery, and from the left ventricle into the aorta, the auricles are filling. Then upon closure of the aortic and pulmonary valves, blood flows passively into the ventricles; and, just before the first sound of the heart, auricular systole drives the remaining blood from the auricles into the ventricles, which in turn propel it onward, the one into the pulmonary and the other into the systemic circulation.

I shall first present to you a man whose heart is unaffected, so that we may have a standard for comparison. The same methods serve to explore the heart that are employed in examination of the lungs. By inspection we see the impulse of the apex in the left fifth intercostal space, about two inches from the sternum. Pulsation is sometimes noticed in the epigastric region, which may not be abnormal. It is not necessarily incompatible with health for the apical impulse to be absent. The

position of the apex can then be determined by auscultation. Palpation enables us to detect the force of the heart's impact against the chest. Mensuration would give the actual distance of cardiac enlargement or of displacement. By thermometry we decide between acute and chronic heart affections ; there is no fever in the latter. Percussion defines the limit of præcordial flatness and of dullness. As I percuss from above downwards one inch to the left of the sternum in the parasternal line, there is a rise in pitch that amounts to dullness at the lower border of the third rib, which changes to flatness at the lower edge of the fourth rib, and thus continues into the left hepatic area. Beginning at the outer side of the left nipple line, on a level with the fourth rib, to percuss towards the sternum, there is dullness just at the inner side of that line which extends to the border of the lung, and flatness thence over the superficial area of the heart as far as the sternum. The area of dullness shows where the heart is covered by lung tissue. Percussion in health to the right of the sternum and over that bone is unsatisfactory. But having located the apex and defined the upper and left borders of the heart, and knowing that the right border extends about one inch to the right of the sternum, we are able to delineate the position of the organ well enough for all practical purposes. On placing the stethoscope over the apex, which is the mitral area, I hear a dull, prolonged tone, low in pitch, and accentuated ; this is followed by a brief pause, and then by a short, sharp, high-pitched note, that in turn is succeeded by a somewhat extended silence.

This is the circuit of one cardiac revolution, with systole and diastole as heard in the mitral region. Next adjusting the instrument to the aortic area, the second right intercostal space, those two sounds are again



heard, and with rhythm unchanged, but with the accent transferred from the first to the second sound. Apical impulse is synchronous with the heart's first sound, yet when there is no perceptible shock, the first sound can be determined by placing the fingers upon the carotid artery, which pulsates also in synchronism with cardiac systole. Enlargement of the heart increases the superficial area of the organ in the direction of the enlargement. With hypertrophy the impulse is forcible and somewhat concentrated; in dilatation it is weak and diffused. From dilatation the first sound loses its muscular element, and is, therefore, short and sharp like the second sound. In hypertrophy there is intensification of the first sound, and the second sound is accentuated by the increased pressure on the valves at the base of the heart. Finally, the first sound is weak in all diseases that cause failure of the contractile power of the ventricles.

Changes in the valves that cause either obstruction or patency, or both, give rise to murmurs, but all murmurs of the heart do not necessarily indicate lesions of the valves. And, too, now and then the valves are seriously affected without producing murmurs. A murmur may be due to simple roughening of an orifice, or of a ventricular cavity; and, moreover, to a perverted muscular action as well as to spanæmia. It is far easier to detect these murmurs than to determine their import, and I can not too emphatically impress upon you the importance of a scrutiny of the heart cavities for the full explanation of what a murmur means.

If there is one with systole at the aortic orifice due to obstruction, there will be hypertrophy of the left ventricle. If one in diastole there will be dilated hypertrophy of that ventricle as a result of the regurgitation. Insufficiency of the mitral valve has a systolic murmur.

and gives rise to enlargement of the left auricle, right ventricle, and eventually of the whole organ. Obstruction at this opening develops a presystolic murmur, and results in enlargement of the left auricle, right ventricle, but not of the left ventricle.

Having discovered a murmur over the heart, the first thing to do is to locate its point of maximum intensity, and next its area of diffusion, and then to determine its rhythm. A valvular murmur takes the place or part of the place of a sound, or precedes it. Aortic systolic murmurs have their point of greatest intensity in the right second intercostal space close to the sternum, and their area of diffusion upwards. Mitral systolic murmurs are heard best at the apex, and are carried to the left and often through the chest to the back, near the lower angle of the left scapula. An aortic diastolic murmur is usually heard plainest at the second right intercostal space, and extends both upwards and downwards. Its point of maximum intensity, however, is not infrequently at the lower end of the sternum.

Murmurs of mitral obstruction are loudest a little above the apex of the heart, and are not widely diffused. Those of tricuspid insufficiency are systolic in time, most pronounced at the lower end of the sternum, and are carried upwards to the right, though not far. Lesions of the pulmonary valve are extremely rare, and need not occupy our attention at present.

Some of the exceptional points in regard to the heart, its position and murmurs, shall be considered another time. It will suffice for to-day if I make clear to you a few leading facts respecting the subject of heart disease : That murmurs have but a relative value, and depend upon the condition of the heart walls for their solution. That lesions are constant, while mur-



murs are not. That some lesions are progressive and others are stationary, and that it is not so much the valve as the integrity of the heart-muscles which concerns us.

With these things in mind let me present a patient for your consideration. Five years ago he had an attack of articular rheumatism. Since then he has complained chiefly of shortness of breath on extra exertion, followed by a slight dry cough, with now and then attacks of flatulent dyspepsia. While all articular rheumatism is not complicated by endocarditis, nor every case of valvulitis the result of that disease, still a damaged valve can often enough be traced to rheumatism to make pertinent an inquiry for that malady. Now, of valvular lesions that of the mitral is most commonly the cause of shortness of breath on exertion, and it is also the oftenest affected by inflammation in rheumatism. Hence we are naturally led to suspect this valve. The apical pulsation is a little below and beyond the ordinary position, and the impact is strong. Too much tissue overlies the cardiac region to enable us to demonstrate, satisfactorily, by percussion, a slight increase in the size of the heart. Auscultation reveals a soft blowing murmur whose greatest intensity is over the apex of the heart, and diffusion to the left. It is audible near the lower angle of the left scapula. Its rhythm is systolic, and it takes the place of the mitral first sound—a mitral systolic murmur. There is no resulting tricuspid affection. Pulsation in the radial artery is neither weak nor irregular. The muscular tone of the heart is good. Apparently little enlargement of the organ has taken place. It is mitral insufficiency, but in my opinion the disease is not progressing. Our patient probably had an acute valvulitis with his articular rheumatism. The scar of



that inflammation remains, but the enlarged heart muscles compensate the insufficiency of the valve, so long as he does not over-exert himself.

Consequently, the prognosis is favorable, providing he follows our advice respecting his mode of life. He must not undertake violent exertion, any more than he would were he lame elsewhere than in his heart. A mixture of rhubarb and soda, including five minims each of the tinctures of *nux vomica* and *digitalis*, taken three times a day before meals, will help correct his stomach difficulty and restore the passing disturbance of the balance between his venous and arterial circulation.

The condition of this patient teaches us that the presence of a valvular lesion need not necessarily cause alarm. He may live a great many years, and sudden death never happens from disease of the mitral valve. Even in aortic insufficiency, which may justly excite apprehension, it is surprising how long adequate compensatory hypertrophy lasts when properly managed.







